Office for
Zero Emission
Vehicles

Design considerations
for electric vehicle chargepoints

March 2022

Enhancing the chargepoint user experience through design

Car and van emissions are responsible for almost a fifth (19%) of the United Kingdom's (UK) domestic greenhouse gas emissions.[1] To meet our climate change objectives of net zero by 2050, we need to reduce emissions from road vehicles.

Government has set ambitious targets for all new cars and vans to be zero emission at the tailpipe by 2035. To support industry and motorists in making the switch to cleaner vehicles, we have pledged a package of measures, including funding to rollout electric vehicle chargepoint infrastructure across the UK. The availability and experience of this infrastructure is paramount to the widespread adoption of electric vehicles. Our intention is to have one of the best infrastructure networks in the world, where everyone benefits from the transition to zero emission transport.

In partnership with the Royal College of Art and PA Consulting, the Office for Zero Emission Vehicles unveiled a user-centric chargepoint design concept at COP26. The concept prioritises ease-of-use, inclusivity, and accessibility. These design considerations were identified and refined through engagement with the public, industry, local authorities, and design experts, including Historic England and the Design Council.

The design considerations set out in this document build on learnings from the chargepoint design concept project. This document is intended to help organisations installing chargepoints think through the role design can play in ensuring a positive experience for both consumers and those using the wider environment (such as pedestrians).

[1] Decarbonising transport: a better, greener Britain, 2021

Design considerations

The following design considerations are suggestions for those installing chargepoints.
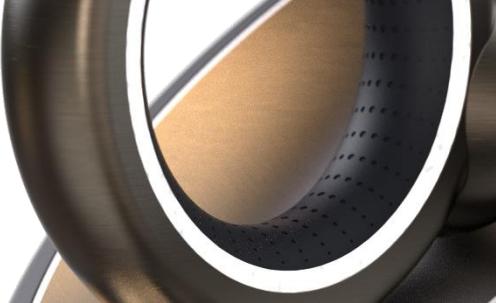

Recognisability of the chargepoint and user interfaces

Visual status
Signal to users if a chargepoint is available and operational, taking the surrounding environment into consideration. For example, avoiding light pollution for residents, businesses, and wildlife.

Online status
Chargepoint operational status and availability should be accessible remotely.

Information
Clear and accessible information, for example charging speed, readable at all times and during different weather conditions.

User guidance
Instructions on how to use the chargepoint, such as initiating and paying for charging.

Feedback prompts
Visual and audible cues indicating, for example, acceptance of payment, start, progress, and completion of charging.
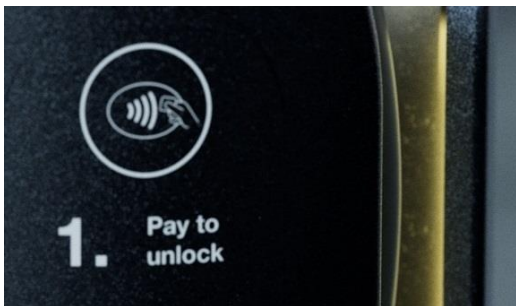
Paying for charging

Payment options
Ease of payment through the inclusion of non-proprietary non-smartphone payment, with additional options available as appropriate for the market.

Price information
Use a simple pricing unit consistent with the wider market (e.g. pence/kWh). Clearly identify the cost to the consumer when payment is bundled with parking or other services.

Open access
Consumers should have ad-hoc access without subscribing or registering to a charging network.
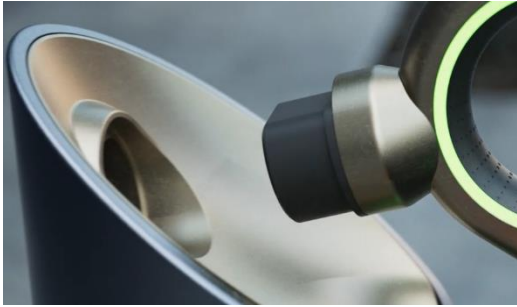
Cable and socket management

Tethered versus untethered cables

Tethered cables can help with ease-of-use but won't be appropriate for all circumstances. Consider the inclusion of a socket in addition to the tethered cable, enabling consumers to use their own cables. For low profile chargepoints, such as those in lampposts, sockets alone will likely be more suitable.

Storage for tethered cables

Appropriate cable management will prevent trip hazards and cable protection will reduce vandalism, such as a retracting system.

Accessible design

Cables and sockets

For tethered chargepoints, ensure an ergonomic design of the plug handle and minimise resistance for the user to extend and manoeuvre the cable. Cables need to be a suitable length to reach the varying locations of sockets on different vehicle models.

Height and location

Ensure the height and location of the chargepoint, cable, socket, and information are accessible for a range of users, including those in wheelchairs.

Safety in use

Consider risks for all users in accessing and using the chargepoint, providing sufficient space to accommodate a range of vehicles and user mobility needs.

Night design

Help users feel safe at night and aid their navigation by illuminating the chargepoint and surrounding area.
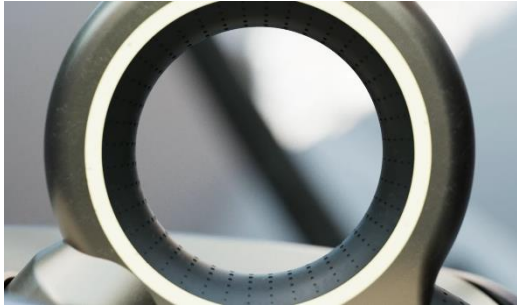
Production, maintenance and end-of-life

Sourcing and processes
Certify that suppliers use environmentally conscious and ethical approaches in material sourcing and manufacturing.

Maintenance and repair
Chargepoints should be designed to allow regular maintenance and repair. Minimising the need for non-standard training and tooling will likely increase uptime and reduce costs.

Reliability
Ensure chargepoint uptime is a minimum of 99% per annum to instil user confidence.

Upgrades
A modular design and the ability to upgrade will likely extend the usable life of the chargepoint.

Re-use and recycling
To maximise the environmental benefits, consider the chargepoint's end-of-life and ability for re-use or recycling.

Installation and setting

Disruption
Where possible, reduce disruption to the surrounding environment during installation.

Adaptable design
Variations of the chargepoint's aesthetic design will allow wider deployment, respecting the distinct or historic characteristics of the surrounding environment.

Branding
Individual operators will likely wish to configure the chargepoint's design to represent their own brand.

Charging Price
£0.24
/ kWh

Total Usage
00 kWh

Total Cost
£0.00